

Mathematics

(Chapter - 7) (Comparing Quantities) (Exercise 7.1) (Class - VIII)

Question 1:

Find the ratio of the following:

(a) Speed of a cycle 15 km per hour to the speed of scooter 30 km per hour.

(b) 5 m to 10 km

(c) 50 paise to ₹5

Answer 1:

(a) Speed of cycle = 15 km/hr

Speed of scooter = 30 km/hr

Hence ratio of speed of cycle to that of scooter = $15 : 30 = \frac{15}{30} = \frac{1}{2} = 1 : 2$

(b) $\because 1 \text{ km} = 1000 \text{ m}$

$\therefore 10 \text{ km} = 10 \times 1000 = 10000 \text{ m}$

$\therefore \text{Ratio} = \frac{5 \text{ m}}{10000 \text{ m}} = \frac{1}{2000} = 1 : 2000$

(c) $\because ₹1 = 100 \text{ paise}$

$\therefore ₹5 = 5 \times 100 = 500 \text{ paise}$

Hence Ratio = $\frac{50 \text{ paise}}{500 \text{ paise}} = \frac{1}{10} = 1 : 10$

Question 2:

Convert the following ratios to percentages:

(a) 3 : 4

(b) 2 : 3

Answer 2:

(a) Percentage of 3 : 4 = $\frac{3}{4} \times 100 \% = 75\%$

(b) Percentage of 2 : 3 = $\frac{2}{3} \times 100 \% = 66\frac{2}{3} \%$

Question 3:

72% of 25 students are good in mathematics. How many are not good in mathematics?

Answer 3:

Total number of students = 25

Number of good students in mathematics = 72% of 25 = $\frac{72}{100} \times 25 = 18$

Number of students not good in mathematics = $25 - 18 = 7$

Hence percentage of students not good in mathematics = $\frac{7}{25} \times 100 = 28\%$

Question 4:

A football team won 10 matches out of the total number of matches they played. If their win percentage was 40, then how many matches did they play in all?

Answer 4:

Let total number of matches be x

According to question, 40% of total matches = 10

$\Rightarrow 40\% \text{ of } x = 10$

$\Rightarrow \frac{40}{100} \times x = 10$

$\Rightarrow x = \frac{10 \times 100}{40} = 25$

Hence, the total number of matches are 25.

Question 5:

If Chameli had ₹600 left after spending 75% of her money, how much did she have in the beginning?

Answer 5:

Let her money in the beginning be ₹ x .

According to question,

$$x - 75\% \text{ of } x = 600$$

$$\Rightarrow x - \frac{75}{100} \times x = 600$$

$$\Rightarrow x - \frac{3}{4}x = 600$$

$$\Rightarrow x \left(1 - \frac{3}{4} \right) = 600$$

$$\Rightarrow x \left(\frac{4-3}{4} \right) = 600$$

$$\Rightarrow x = 600 \times 4 = ₹2400$$

Hence the money in the beginning was ₹2,400.

Question 6:

If 60% people in a city like cricket, 30% like football and the remaining like other games, then what percent of the people like other games? If the total number of people are 50 lakhs, find the exact number who like each type of game.

Answer 6:

Number of people who like cricket = 60%

Number of people who like football = 30%

Number of people who like other games = $100\% - (60\% + 30\%) = 10\%$

Now, Number of people who like cricket = 60% of 50,00,000

$$= \frac{60}{100} \times 50,00,000 = 30,00,000$$

And, Number of people who like football = 30% of 50,00,000

$$= \frac{30}{100} \times 50,00,000 = 15,00,000$$

\therefore Number of people who like other games = 10% of 50,00,000

$$= \frac{10}{100} \times 50,00,000 = 5,00,000$$

Hence, number of people who like other games are 5 lakhs.

Mathematics

(Chapter - 7) (Comparing Quantities) (Exercise 7.2) (Class - VIII)

Question 1:

During a sale, a shop offered a discount of 10% on the marked prices of all the items. What would a customer have to pay for a pair of jeans marked at ₹1450 and two shirts marked at ₹ 850 each?

Answer 1:

Rate of discount on all items = 10%

Marked Price of a pair of jeans = ₹1450 and Marked Price of a shirt = ₹850

$$\text{Discount on a pair of jeans} = \frac{\text{Rate} \times \text{M.P.}}{100} = \frac{10 \times 1450}{100} = ₹ 145$$

$$\therefore \text{S.P. of a pair of jeans} = ₹1450 - ₹ 145 = ₹1305$$

Marked Price of two shirts = $2 \times 850 = ₹1700$

$$\text{Discount on two shirts} = \frac{\text{Rate} \times \text{M.P.}}{100} = \frac{10 \times 1700}{100} = ₹ 170$$

$$\therefore \text{S.P. of two shirts} = ₹1700 - ₹ 170 = ₹1530$$

Therefore, the customer had to pay = $1305 + 1530 = ₹2,835$

Question 2:

The price of a TV is ₹13,000. The sales tax charged on it is at the rate of 12%. Find the amount that Vinod will have to pay if he buys it.

Answer 2:

C.P. = ₹13,000 and S.T. rate = 12%

Let C.P. be ₹100, then S.P. for purchaser = $100 + 12 = ₹112$

\therefore When C.P. is ₹100, then S.P. = ₹112

$$\therefore \text{When C.P. is ₹ 1, then S.P.} = \frac{112}{100}$$

$$\therefore \text{When C.P. is ₹ 13,000, then S.P.} = \frac{112}{100} \times 13000 = ₹ 14,560$$

Question 3:

Arun bought a pair of skates at a sale where the discount given was 20%. If the amount he pays is ₹1,600, find the marked price.

Answer 3:

S.P. = ₹1,600 and Rate of discount = 20%

Let M.P. be ₹100, then S.P. for customer = $100 - 20 = ₹80$

\therefore When S.P. is ₹80, then M.P. = ₹100

$$\therefore \text{When S.P. is ₹1, then M.P.} = \frac{100}{80}$$

$$\therefore \text{When S.P. is ₹1600, then M.P.} = \frac{100}{80} \times 1600 = ₹ 2,000$$

Question 4:

I purchased a hair-dryer for ₹5,400 including 8% VAT. Find the price before VAT was added.

Answer 4:

C.P. = ₹5,400 and Rate of VAT = 8%

Let C.P. without VAT is ₹100, then price including VAT = $100 + 8 = ₹108$

\therefore When price including VAT is ₹108, then original price = ₹100

$$\therefore \text{When price including VAT is ₹1, then original price} = \frac{100}{108}$$

$$\therefore \text{When price including VAT is ₹5400, then original price} = \frac{100}{108} \times 5400 = ₹ 5000$$

Question 5:

An article was purchased for ₹1239 including GST of 18%. Find the price of the article before GST was added?

Answer 5:

Let the cost price of article without GST = ₹ 100

Now GST = 18%

So, total cost including GST = $100 + 18 = ₹ 118$

∴ When total cost is ₹ 118, then actual cost = ₹ 100

∴ When total cost is ₹ 1, then actual cost = $\frac{100}{118}$

∴ When total cost is ₹ 1239, then actual cost = $\frac{100}{118} \times 1239 = ₹ 1,050$

So, the price of the article before GST was ₹1050.

Mathematics

(Chapter – 7) (Comparing Quantities) (Exercise 7.3) (Class – VIII)

Question 1:

The population of a place increased to 54,000 in 2003 at a rate of 5% per annum.

(i) Find the population in 2001.

(ii) What would be its population in 2005?

Answer 1:

(i) Here, $A_{2003} = 54,000$, $R = 5\%$, $n = 2$ years

Population would be less in 2001 than 2003 in two years.

Here population is increasing.

$$\therefore A_{2003} = P_{2001} \left(1 + \frac{R}{100}\right)^n \Rightarrow 54000 = P_{2001} \left(1 + \frac{5}{100}\right)^2$$

$$\Rightarrow 54000 = P_{2001} \left(1 + \frac{1}{20}\right)^2 \Rightarrow 54000 = P_{2001} \left(\frac{21}{20}\right)^2$$

$$\Rightarrow 54000 = P_{2001} \times \frac{21}{20} \times \frac{21}{20} \Rightarrow P_{2001} = \frac{54000 \times 20 \times 20}{21 \times 21} \Rightarrow P_{2001} = 48,980 \text{ (approx.)}$$

(ii) According to question, population is increasing.

Therefore, population in 2005,

$$\begin{aligned} A_{2005} &= P \left(1 + \frac{R}{100}\right)^n = 54000 \left(1 + \frac{5}{100}\right)^2 = 54000 \left(1 + \frac{1}{20}\right)^2 \\ &= 54000 \left(\frac{21}{20}\right)^2 = 54000 \times \frac{21}{20} \times \frac{21}{20} = 59,535 \end{aligned}$$

Hence population in 2005 would be 59,535.

Question 2:

In a laboratory, the count of bacteria in a certain experiment was increasing at the rate of 2.5% per hour. Find the bacteria at the end of 2 hours if the count was initially 5,06,000.

Answer 2:

Here, Principal (P) = 5,06,000, Rate of Interest (R) = 2.5%, Time (n) = 2 hours

After 2 hours, number of bacteria,

$$\begin{aligned} \text{Amount (A)} &= P \left(1 + \frac{R}{100}\right)^n \\ &= 506000 \left(1 + \frac{2.5}{100}\right)^2 \\ &= 506000 \left(1 + \frac{25}{1000}\right)^2 \\ &= 506000 \left(1 + \frac{1}{40}\right)^2 \\ &= 506000 \left(\frac{41}{40}\right)^2 \\ &= 506000 \times \frac{41}{40} \times \frac{41}{40} = 5,31,616.25 \end{aligned}$$

Hence, number of bacteria after two hours are 531616 (approx.).

Question 3:

A scooter was bought at ₹42,000. Its value depreciated at the rate of 8% per annum. Find its value after one year.

Answer 3:

Here, Principal (P) = ₹42,000, Rate of Interest (R) = 8%, Time (n) = 1 years

$$\begin{aligned}\text{Amount (A)} &= P \left(1 - \frac{R}{100}\right)^n \\&= 42000 \left(1 - \frac{8}{100}\right)^1 \\&= 42000 \left(1 + \frac{2}{25}\right)^1 \\&= 42000 \left(\frac{27}{25}\right)^1 \\&= 42000 \times \frac{27}{25} = ₹ 38,640\end{aligned}$$

Hence, the value of scooter after one year is ₹38,640.